

Description of new species of *Favartia* (*Pygmaeapterys*) and *Typhinellus* (Muricidae: Muricopsinae and Typhinae) from Southern Oman

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ABSTRACT. Two new muricids are described from southern Oman. *Favartia* (*Pygmaeapterys*) *dhofarensis* n. sp. is not related to any other species from the same area but is compared to *Favartia* (*Pygmaeapterys*) *alfredensis* (Bartsch, 1915) and *F. (P.) maraisi* (Vokes, 1978) from South Africa. *Typhinellus mirbatensis* n. sp. is compared with *T. amoenus* (Houart, 1994) from South Africa and Madagascar, *T. androyensis* Bozzetti, 2007 from Madagascar and the Gulf of Aden (new locality) and *T. labiatus* Cristofori & Jan, 1832 from the Mediterranean and northeastern Atlantic.

Noteworthy range extensions are reported for *Muricopsis chiarae* Bozzetti, 1991 and *Typhinellus androyensis* Bozzetti, 2007.

INTRODUCTION

Several muricids were collected during a recent trip to southern Oman by two authors of this paper (SG and JR). The dives took place day and night in the Mirbat area, between 16° 57' N - 54° 43' E and 16° 57' N - 54° 49' E, in 10-24 m (Fig. 1). The weather was windy and the sea was rough. Collecting was mainly in two habitats: a rocky bottom with corals and stones covered by sand or a sandy gravel bottom. The following were found to be sympatric with the new species: *Favartia flexirostris* (Melvill, 1898), *Conus stocki* Coomans & Moolenbeek, 1990, *Dentalium tomlini* Melvill, 1918, *Volvarina dhofarensis* Boyer, 2015, *Marginella caterinae* Bozzetti, 1991, *Persicula vanpeli* Moolenbeek & van der Bijl, 2008 as well as other species still currently under study.

Two muricopsine species had previously already been described from Masirah Island by Houart & Gori (2011) and the *Favartia* species occurring in Oman and nearby localities were listed and illustrated in that paper.

The presence of some of these species is now also confirmed from southern Oman: *Favartia* (*Favartia*) *roseotincta* Houart & Gori, 2011, *F. (F.)*

colombi Houart & Gori, 2011, *F. (F.) flexirostris* (Melvill, 1898) and *F. (Pygmaeapterys) yemenensis* (Houart & Wranik, 1989).

Empty shells of *Favartia* (*Favartia*) *roseotincta* Houart & Gori, 2011 were collected in Mirbat and show a more complex spiral sculpture than originally described from Masirah Island. A specimen is illustrated here showing the additional secondary cords (Fig. 2A). Protoconch and other shell morphology are similar to the originally described specimens.

A few juvenile shells were identified as *Muricopsis chiarae* Bozzetti, 1991 (Fig. 3A-C). This species was described from empty shells collected off Ras Hafun in Somalia (Bozzetti, 1991: 44) (Fig. 1). The presence of living specimens along the coast of southern Oman is not unexpected but is certainly a noteworthy range extension. This species is similar to *Muricopsis omanensis* described from Masirah Island by Smythe & Oliver (1986: 181) but differs in protoconch and spiral sculpture morphology.

Four additional muricid species were also collected, two of those are new and described here and two remain unidentified so far due to lack of fresh material.



Figure 1. Map of Oman and neighbouring countries

Abbreviations

Terminology used to describe the spiral cords and the apertural denticles (after Merle 2001; 2005) (Fig. 2A-E). Terminology in parentheses: variable feature

Convex part of teleoconch whorl and siphonal canal

ab: abapical (or abapertural);
 abis: abapical infrasutural secondary cord (on subsutural ramp);
 ABP: abapertural primary cord on the siphonal canal;
 ad: adapical (or adapertural);
 adis: adapical infrasutural secondary cord (on subsutural ramp);
 ADP: adapertural primary cord on the siphonal canal;
 IP: infrasutural primary cord (primary cord on subsutural ramp);

MP: median primary cord on the siphonal canal;

P: primary cord;

P1: shoulder cord;

P2-P6: primary cords of the convex part of the teleoconch whorl;

s: secondary cord;

s1-s6: secondary cords of the convex part of the teleoconch whorl (example: s1 = secondary cord between P1 and P2; s2 = secondary cord between P2 and P3, etc.);

SP: subsutural cord;

t: tertiary cord.

Aperture

D1 to D5: abapical denticles;

ID: Infrasutural denticle.

Figure 2A-E. Spiral cords and apertural denticles morphology

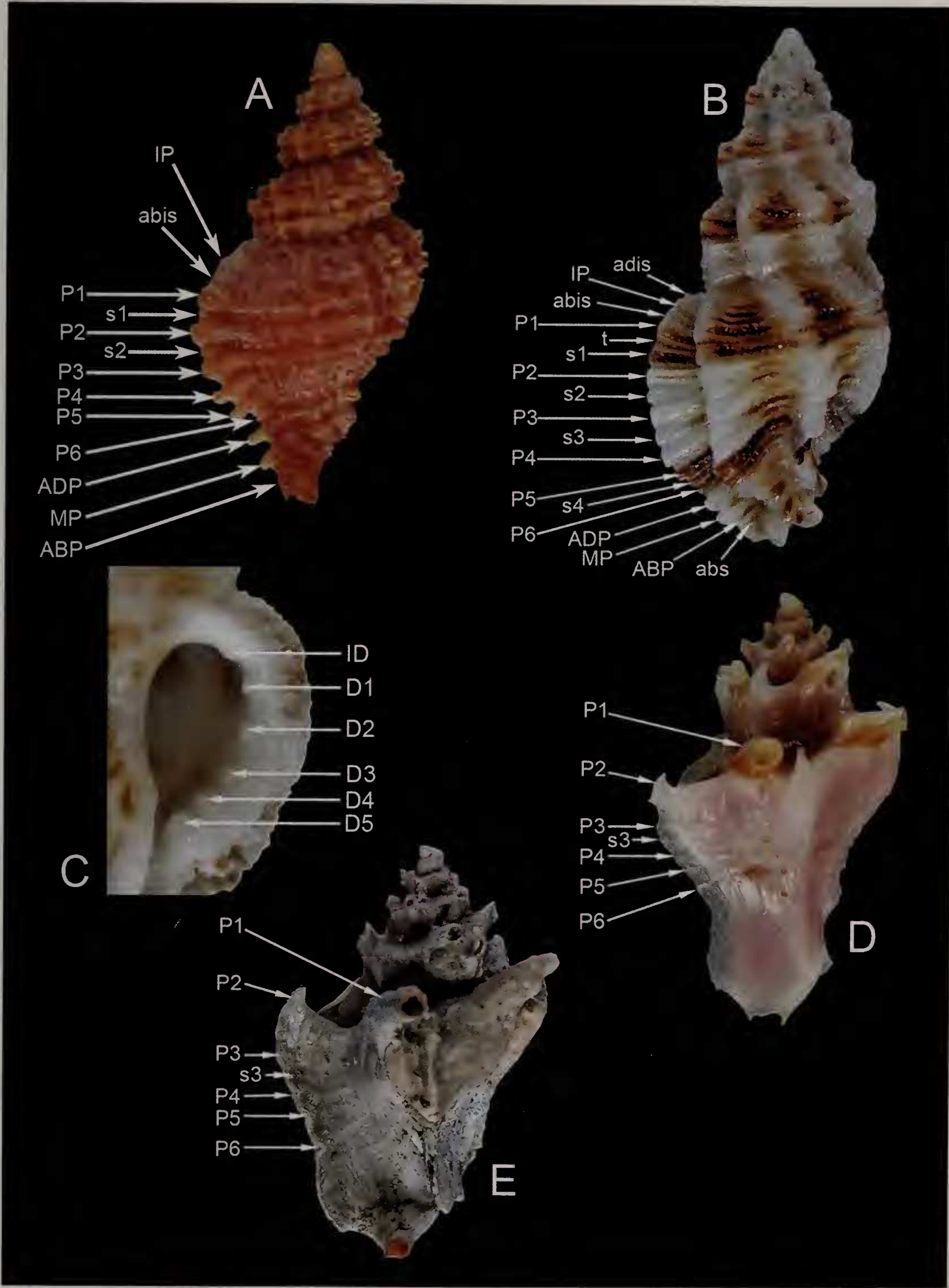
A. *Favartia (Favartia) roseotincta* Houart & Gori, 2011. Oman, Dhofar, Mirbat, 16° 57' N, 54° 44' E, Marriott Deep Wall, 6.9 mm.

B-C. *Favartia (Pygmaepterys) dhofarensis* n. sp.

B. Oman, Dhofar, north of Mirbat, 10 m, paratype JR, 11.8 mm; **C.** Oman, Dhofar, Mirbat, holotype MNHN IM-2000-30320, apertural denticles.

D-E. *Typhinellus mirbatensis* n. sp.

D. Oman, Dhofar, north of Mirbat, holotype MNHN IM-2000-30321, 12 mm; **E.** Oman, Dhofar, Mirbat, paratype SG, 11.3 mm.



Other abbreviations

ad: adult shell.

dd: empty shell.

juv: juvenile shell.

lv: live collected specimen.

MNHN: Muséum national d'Histoire naturelle, Paris, France.

NMSA: Natal Museum, Pietermaritzburg, South Africa.

JR: Collection of Jose Rosado.

RH: Collection of Roland Houart.

SG: Collection of Sando Gori.

SYSTEMATICSFamily **MURICIDAE** Rafinesque, 1815Subfamily **MURICOPSINAE** Radwin & D'Attilio, 1971Genus *Favartia* Jousseaume, 1880Subgenus *Pygmaepterys* Vokes, 1978Type species by original designation: *Murex alfredensis* Bartsch, 1915, South Africa.*Favartia (Pygmaepterys) dhofarensis* n. sp.

Figs 2B-C, 3D-J

Type material. Oman, Dhofar, Mirbat, Leather Coral Gardens, 16° 57' N, 54° 46' E, 15 m, 12 Nov 2014, holotype MNHN IM-2000-30320 (dd) (ex SG); Oman, Dhofar, Mirbat, Hamdy's Block, 20 m, 1 paratype SG (dd); Oman, Dhofar, Mirbat, English Bay, 16°57' N, 54°49' E, 10 m, 1 paratype SG (dd); Oman, Dhofar, Mirbat Hamdy's Block, 15 m, 2 paratypes SG (lv & dd), 1 paratype RH (dd, juv) (ex SG); Oman, Dhofar, Mirbat, Marriott deep wall, 16°57' N, 54°44' E, 20 m, 8 paratypes SG (ad, juv, dd), 1 paratype RH (dd, juv) (ex SG); Oman, Dhofar, Mirbat, Marriott deep wall, 16°57' N, 54°44' E, 18-22 m, 1 paratype JR (dd).

Distribution. Oman, Dhofar, Mirbat, in 15-20 m, empty shells only (Fig. 1).

Description. Shell large for the subgenus, up to 12.1 mm in length at maturity (paratype SG). Length/width ratio 2.08-2.23. Slender, lanceolate, narrow, heavy,

nodose. Subsutural ramp narrow, weakly sloping and concave.

Creamy white with light and dark brown spiral cords, adis-IP only topped with light brown, abis-s1 dark brown, P2-P4 only topped with light brown but s3 occasionally entirely dark brown, P5-s5 dark brown, P6 dark brown or only topped with brown, ADP-ABP topped with light brown. Aperture glossy white.

Spire very high, acute, with 2 protoconch whorls and up to 5 weakly convex, narrow, lightly shouldered, nodose whorls. Suture slightly adpressed, mostly obscured by varices of following whorl.

First whorl of protoconch small, narrow (width 400 µm) rounded, last whorl broad (700 µm), weakly convex. Terminal lip eroded.

Axial sculpture of teleoconch whorls consisting of low, narrow, weakly frondose varices. Each varix with very short, frondose, narrow, open primary spines, occasionally almost obsolete, except short shoulder spine. First teleoconch whorl with 6 varices, second to penultimate with 8 or 9, last whorl with 7 or 8 varices. Spiral sculpture of high, rounded, narrow, squamous, primary, secondary and tertiary cords. First whorl with visible P1 and P2; second with P1, (s1), P2, P3; third with P1, s1, P2, P3, starting IP, occasionally abis. Last whorl with adis, IP, abis, P1, t, s1, P2, s2, P3, (t), s3, P4, P5, s5, P6, s6, ADP, MP, ABP, (abs).

Aperture roundly ovate, columellar lip narrow, smooth, rim adherent. Anal notch shallow, broad. Outer lip weakly erect with 6 weak denticles within: ID, D1-D5.

Siphonal canal short, broad, weakly dorsally recurved at tip, open, with 2 broad ADP and MP cords, narrower ABP cord and occasional narrow abs cord.

Operculum and radula unknown.

Remarks. *Favartia (Pygmaepterys) dhofarensis* n. sp. is not closely related to any other *Pygmaepterys* species from this area. The only three species known to date are *F. (P.) adenensis* (Houart & Wranik, 1989), *F. (P.) paulboschi* Smythe & Houart, 1984 and *F. (P.) yemenensis* (Houart & Wranik, 1989) and all differ strongly in shell characters.

Favartia (Pygmaepterys) dhofarensis n. sp. resembles two South African species, namely *F. (P.) alfredensis* (Bartsch, 1915) (Fig. 4) and *F. (P.) maraisi* (Vokes, 1978) (Fig. 5). See also Vokes (1978) and Houart, Kilburn & Marais (2010: 217-218).

Figure 3A-M

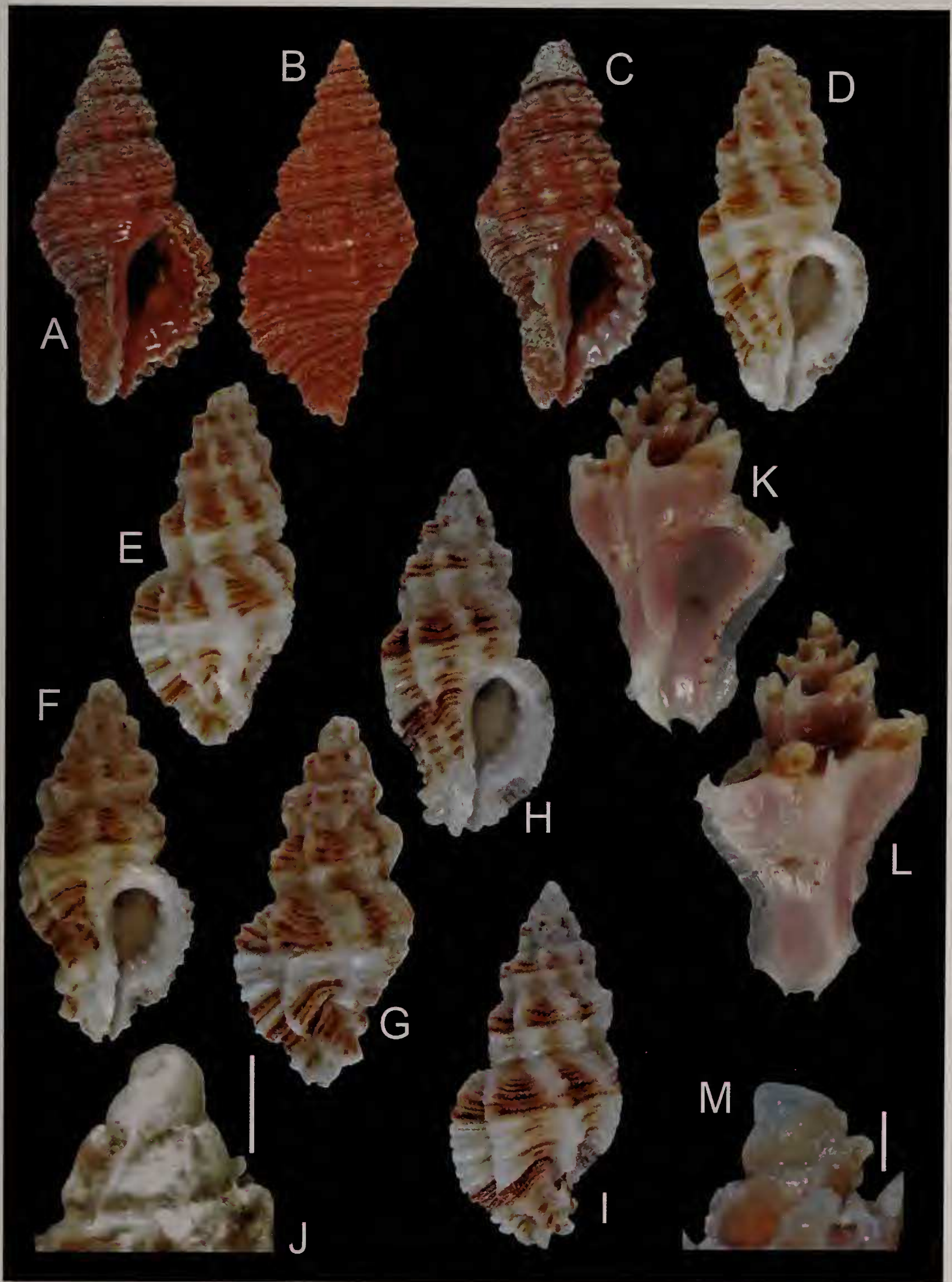
A-C. *Muricopsis chiarae* Bozzetti, 1991, Oman, Dhofar, Mirbat, Hamdy's Rock, 8m, SG.

A-B. 14.2 mm; **C.** 12.9 mm.

D-J. *Favartia (Pygmaepterys) dhofarensis* n. sp., Oman, Dhofar, north of Mirbat.

D-E. Holotype MNHN IM-2000-30320, 11.6 mm; **F-G.** Paratype SG, 12 mm; **H-I.** Paratype JR, 11.8 mm; **J.** Protoconch, paratype RH, scale bar 500 µm.

K-M. *Typhinellus mirbatensis* n. sp. Oman, Dhofar, Mirbat, holotype MNHN IM-2000-30321, scale bar 500 µm.



Both species were described from juvenile shells, reaching only 6 mm in length with 3.5 or 4 teleoconch whorls. *F. (P.) dhofarensis* differs in having a small, elongate protoconch compared to the large, bulbous whorls of *F. (P.) maraisi*. It also differs from both species in having comparatively broader and fewer primary spiral cords on the first 3 or 4 teleoconch whorls, in having a comparatively broader, rounder aperture with stronger and less elongate denticles within the outer lip and in not having a conspicuous, weakly recurved, open spine at the shoulder.

Etymology. This species is named after the place where the type specimens were collected, the Dhofar Governorate of Oman.



4. *Favartia (Pygmaepterys) alfredensis* (Bartsch, 1915). Holotype NM 5461, 6.0 mm (photo courtesy E.H. Vokes)



5. *Favartia (Pygmaepterys) maraisi* (Vokes, 1978). Holotype NM A5048, 5.7 mm (photo courtesy E.H. Vokes)

Typhinellus mirbatensis n. sp.

Figs 2D-E, 3K-M, 6A-F

Type material. Oman, Dhofar, north of Mirbat, Marriott deep wall, 16°57' N, 54°44' E, 18-22 m, Nov. 2014. Holotype MNHN IM-2000-30321 (lv) (ex JR), 1 paratype JR (lv); Oman, Dhofar, Mirbat, Hamdy's Block West, 10 m. Flat rocks under a thin layer of sand with seaweed, 1 paratype SG (lv)

Distribution. Oman, Dhofar, Mirbat, 10-22 m, on flat rocks with thin layer of sand with seaweed (Fig. 1).

Description. Shell medium sized for the genus, up to 15.7 mm in length at maturity (paratype JR). Length/width ratio 1.54-1.56. Broadly angulate, almost smooth, lightly built. Subsutural ramp narrow, weakly sloping and concave.

Light pink, covered by a greyish white intritacalx (paratype SG). Subsutural band dark brown. Small dark brown dots along outer apertural edge and on adapertural part of varices. Aperture white or light pink within.

Spire moderately high with 1.6 protoconch whorls. Teleoconch of 5 broad, angulate, strongly shouldered whorls. Suture impressed. Protoconch large, strongly keeled adapically, otherwise smooth. Maximum width 850 µm. Terminal lip shallow, thin, opisthoclinal.

Axial sculpture of teleoconch whorls consisting of 4 low, rounded, lamellate varices per whorl, each with a short, open, inward curved shoulder spine. Apertural varix broad with dorsally reflected, wide, lamellae and 4-6 broad, short spinelets at outer edge, corresponding to shallow spiral cords. Variceal flange extending to base of siphonal canal. Shoulder spine broad, triangular, dorsally bent, connected to last teleoconch whorl by a broad, thin, lamellate partition. Spiral sculpture faint, consisting of P1 with long, tapering, ventrally sealed anal tube, forming an angle of approximately 90° with axis of shell. Other spiral cords consisting of P2 (shoulder spine), P3, s3, P4, P5 and P6. Spiral sculpture more apparent on adapertural part of apertural varix. Paratype SG with very faint, broad, ADP, MP and ABP.

Figure 6A-L

A-F. *Typhinellus mirbatensis* n. sp.

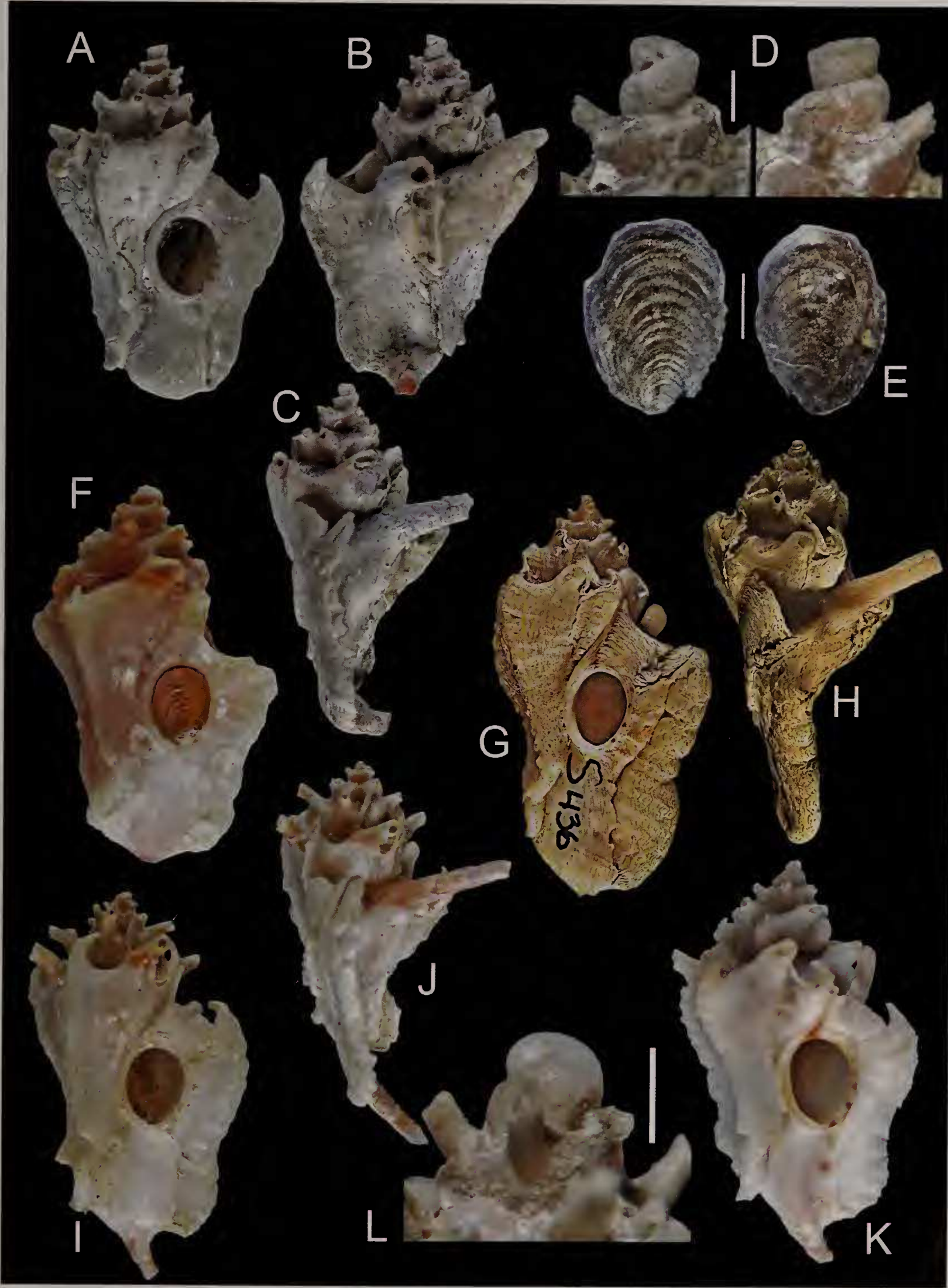
A-D. Paratype SG, 11.3 mm, scale bar 500 µm; E. Operculum, holotype MNHN IM-2000-30321, scale bar 1 mm; F. Paratype JR, 15.7 mm.

G-H. *Typhinellus amoenus* (Houart, 1994), South Africa, Natal, holotype NMSA S436, 21 mm (photo courtesy A. Marais).

I-J. *Typhinellus androyensis* Bozzetti, 2007, Gulf of Aden, Yemen, 25 m, RH, 16.8 mm.

K-L. *Typhinellus labiatus* (Cristofori & Jan, 1832)

K. Kerkennah, Tunisia, RH, 16.7 mm; L. Protoconch, Sicily, RH, scale bar 500 µm.



Aperture large, ovate, forming an erect, continuous peristome. Columellar lip narrow, outer lip smooth within. Siphonal canal broad, long, straight, ventrally sealed, tip strongly bent backward at tip (paratype SG).

Operculum roundly ovate, with apical nucleus and 16 or 17 concentric ridges at outer surface.

Radula unknown.

Remarks. *Typhinellus mirbatensis* n. sp. differs from *T. amoenus* (Houart, 1994) (Fig. 6G-H) from South Africa and Madagascar in having a broader, strongly shouldered protoconch 850 μm in width rather than a rounded and small (700 μm wide) protoconch as occurs in *T. amoenus*. *Typhinellus mirbatensis* also has very shallow spiral cords rather than the narrow and conspicuous cords of *T. amoenus*. In *T. mirbatensis* the last teleoconch whorl is also more strongly shouldered, slightly narrower and more strongly constricted.

Typhinellus mirbatensis differs from *T. androyensis* Bozzetti, 2007 from Madagascar and Yemen (new locality) (Fig. 6I-J) in having a broader, stouter, more strongly constricted, and more strongly shouldered last teleoconch whorl, comparatively narrower spire whorls and a broader, strongly shouldered protoconch which is 850 μm wide compared to the rounded and smaller (650 μm wide) protoconch of *T. androyensis*. It also differs from *Typhinellus labiatus* (Cristofori & Jan, 1832) (Fig. 6K-L) from the Mediterranean and the northeastern Atlantic in having a more strongly shouldered and constricted last teleoconch whorl and in having a broad, large, shouldered protoconch compared to the small (650-700 μm wide), rounded protoconch of *T. labiatus*.

Etymology. This species is named after the place where the type specimens were collected, Mirbat, in the Dhofar Governorate of Oman.

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